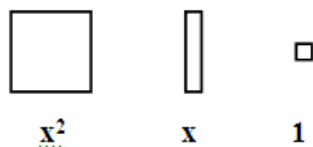


WORKING with QUADRATIC EXPRESSIONS

Using Algebra Tiles to Represent Polynomials



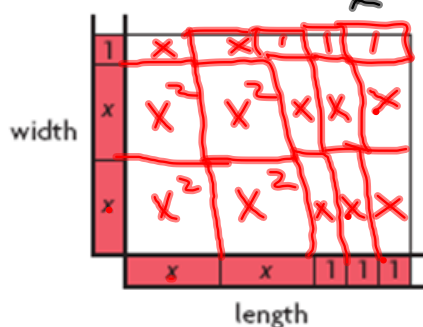
positive quantities = red tiles

negative quantities = blue tiles

One way to multiply two linear expressions is to use an area model with algebra tiles. If you multiply two expressions, the expressions describe the length and width of a rectangle. The area of the rectangle is the product.

Example #1: Multiplying 2 Binomials by using Algebra Tiles

The length of a rectangle is $2x + 3$ and the width is $2x + 1$. What is the area?



$$(2x+3)(2x+1)$$

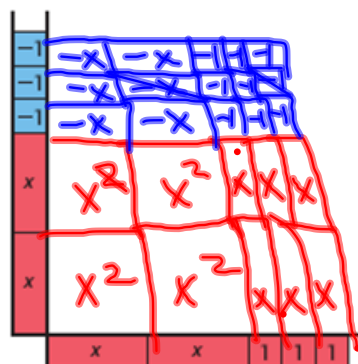
$$4x^2 + 8x + 3 \checkmark$$

Example #2: Find the Product of a Sum and a Difference of 2 Terms using Algebra Tiles

Find $(2x + 3)(2x - 3)$.

$$4x^2 + 6x - 6x - 9$$

$$\boxed{4x^2 - 9}$$



For the product of a MONOMIAL and a BINOMIAL, the distributive property states:

$$a(b + c) = ab + ac$$

For the product of a BINOMIAL and a BINOMIAL, apply the distributive property twice:

FOIL
First
Outer
Inner
Last

$$(a + b)(c + d) = a(c + d) + b(c + d) = ac + ad + bc + bd$$

Example #3: Expanding & Simplifying Quadratic Expressions Algebraically

Expand and simplify:

a) $x(3x + 2)$

$$3x^2 + 2x$$

b) $(3x + 4)^2$

$$(3x + 4)(3x + 4)$$

$$9x^2 + 12x + 12x + 16$$

$$9x^2 + 24x + 16$$

c) $4(2x - 3)^2$

$$4(2x - 3)(2x - 3)$$

$$4(4x^2 - 6x - 6x + 9)$$

$$4(4x^2 - 12x + 9)$$

$$16x^2 - 48x + 36$$

d) $-2(a - 5)(3a - 2)$

$$-2(3a^2 - 2a - 15a + 10)$$

$$-2(3a^2 - 17a + 10)$$

$$-6a^2 + 34a - 20$$

e) $3n(n - 4) + (5n + 1)(3n - 2)$

$$3n^2 - 12n + (15n^2 - 10n + 3n - 2)$$

$$3n^2 - 12n + 15n^2 - 7n - 2$$

$$18n^2 - 19n - 2$$